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"We need to transform not only our armed forces, but also the Department of Defense itself, by encouraging a culture of creativity and sensible risk taking. We need to encourage a more entrepreneurial approach to developing military capabilities—one that is not mired in the past and one that does not simply wait for new threats to emerge to take us by surprise."

Defense Secretary Donald Rumsfeld

New Rules for a New Era

Vice Adm. (ret.) Arthur K. Cebrowski, Director, Office of Force Transformation

If defenders of the Army's Crusader artillery program think it was cancelled only because of its considerable weight, they are wrong—although that is partly true. Defense observers are similarly wrong if they think that is an isolated event. The Crusader decision highlights two critical issues:

1) A new body of decision logic, or rules, is emerging that can be applied across the Department of Defense. These are powerful indicators of what is to come.
2) Fundamental flaws in the Pentagon's daily processes have unintended consequences that are slowing progress toward an undeniable future.

With the dramatic change in warfare being unleashed by the transition to the information age, future military capabilities must be judged using new criteria. Pentagon leaders require different decision logic to understand which attributes of future systems are rising in importance, which are falling, and what overall mix of capabilities to pursue. Yet, the deeper, more profound debate is about the changing military "rule sets" that indicates new sources of power and how they are brought to bear. The outcome of that debate holds far more importance than the fate of a lone weapons system.

All of the world's major economies are moving from the industrial age to the information age. The issue for the United States military is how to sustain a competitive advantage in

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this new, rapidly changing arena. Metrics of value in the industrial age must give way to new information age metrics—no matter the discomfort they bring. Applying outdated metrics, yet more efficiently, will not yield the new competitive combat advantages our nation requires on the battlefields of tomorrow.

In moving to the information age, the nation is entering an era where *advantages are conferred on the small, the fast and the many*. These capabilities in turn will be paid for by the ponderous and the massive. Size shrinks because of the "demassification" of warfare that comes about by substituting information for tonnage. The Air Force says that a target once requiring 1,000 bombs to destroy now requires only one. That magnitude of change is owed almost entirely to information technology and processes. A second key metric is increased speed, resulting not just from the decreased mass to be moved, but also from organizations streamlined to benefit from their superior information position. The result is a highly responsive, dispersed force with lower costs per unit of combat power. That is, increased combat power is vested in yet smaller units. One result of this is the need for new joint organizations and processes in small units, which were once considered the exclusive domain of the military services.

The military force must be rebalanced for future operations. The information component of the force must increase. Our sensor and networking capabilities must increase at the expense of more industrial age measures of combat power. Even before Operation Enduring Freedom, we were finding that we fight first for an information advantage and maneuver for a superior sensor position. So, an early question that must be posed regarding any weapon system is whether it is on the "net." If not, then it is not contributing, not benefiting and not part of the information age. Program managers across all of the services must understand that if they fail to achieve joint force interoperability, they are nominating their programs for cancellation.

In this age of strategic uncertainty, *risk is managed by increasing the breadth of capabilities*, no matter the imperfections, even at the expense of highly effective capabilities bought in quantity. The real issue is not how much is enough, but do we have the breath of capabilities necessary to address strategic gaps. The importance of this metric was dramatically demonstrated on September 11, 2001. New concepts and capabilities must be favored over quantitative increases in the old. Of course, even these new capabilities must be prioritized, according to the new strategic and technical context, and the broadening threat base.

We must ask if a system is performing at increasing or decreasing rates of return on investment. That is, is the increased capability worth the cost? As a result of otherwise laudable Cold War efforts, we now have programs to produce the "ultimate" fighter aircraft, the "ultimate" artillery piece, the "ultimate" surface combatant and the "ultimate" of everything. Such systems must be candidates for review because they

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invariably perform at decreasing returns, not because these systems are not more efficient than their predecessors, but because the altered strategic environment has devalued their very existence. Potential enemies have also had time to prepare asymmetric counters, and the cost and complexity of the increased capability frequently outpaces its marginal value.

Crusader was the poster child for "skipping a generation," as President Bush has talked about on several occasions. It is a legacy of industrial age warfare born to satisfy the Army's indirect fire requirements in a strategic context that no longer exists. Some officers argue that we need Crusader in Korea today. Whether that is true is irrelevant. Crusader won't be delivered to Korea today, next year, or the year after. By the time it gets there, the North Korean threat might not exist and other more advanced capabilities are coming on line. Adherence to the old forecloses the new. When we say there is nothing fundamentally wrong with these highly developed systems, we miss the point that they may be the wrong systems, for the wrong time, acquired for the wrong reasons, supporting operational concepts that are in devolution.

Furthermore, many of these high performance systems are the result of 15 to 25 year development cycles and carry the baggage of technical and managerial choices we would never make today. Hence, they are candidates for critical review. For example, many key decisions about the troubled V-22 tilt rotor aircraft and the Army's Comanche helicopter were made during the Reagan build-up nearly 20 years ago. When, and if, these aircraft finally achieve full operational capability, key design elements will be older than the aviators who will fly them. We might expect that with the B-52, but the V-22 and Comanche are meant to be new and take us into the future. If program managers want their program to survive, they must solve and resolve the riddle of why commercial cycle times are measured in weeks, months or just a few years, while DoD's cycle time is measured in decades.

Over time the validity or power of a particular type of capability changes. For example, the reasons normally given for artillery organic to the maneuver forces are low cost, high volume of fire and very short response time for the tactical commanders' needs. These are powerful arguments, but those advantages can now be equaled or exceeded with new technologies and new military organizations. In Afghanistan, aircraft, missile systems and long-range dispersed joint capabilities empowered by high-speed network centric warfare principles outperformed artillery. But we also learned that reliance on airpower alone carries high risks. What is required is a mix of capabilities. Programs must be conceived with that mix in mind. Arguments for a system or capability without consideration of the emerging joint character of warfare are not uncommon and indicate additional areas for elimination.

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What is so very difficult about applying these metrics or decision tools within the DoD? It is that they directly challenge old and established ways of thinking, the embedded value structure and incentives, the overall culture festering in the Pentagon petrie dish since 1947. This highlights the second fundamental issue revealed in Crusader's cancellation: the pernicious impact core Pentagon processes exert on the future value of our capabilities even as we work hard to attain them.

The "program" is the most important and highly visible of the many products in the Pentagon. It is the bureaucratic vehicle for pushing a capability or system from inception, through the Pentagon and into the operating forces. The program becomes the yardstick to measure one's success or failure. To attain the lofty status of being a "program of record" decision makers must be assured of the system's military value and need, even if the capability will not arrive in the operating forces for another 15 to 25 years. Once these future predictions attain an aura of certitude, the program is given a Program Element Number, PE, the bureaucratic parking space for money being allocated to it.

This written justification is important because over the next many years it will be referenced during the annual defense of the program, first within the Pentagon, and finally in Congress. It will also be rewritten as necessary to fend off attacks of new competitors or new information. The inevitability of this process stems from the folly of declaring the unknowable as known. Of course it is not called that. Rather, we speak of the "validated threat," the "validated requirement," or the "validated architecture." In the process we shackle our future to our past. This is called the requirements process. In short, on being declared a "program of record" the first casualty is the truth.

The concept of the program of record is a useful device, and it would be hard to imagine running the department without it. But as currently used, it acts as a roadblock to the future while trying vainly to create it. First, any new information, such as evidence of a changing world, is a threat to the program, and perverse efforts are sometimes mounted to undermine the value of such information. Second, program sponsors and their technical and management teams are often aware of imperfections and latent weaknesses in their programs and that potential enemies will use emerging technologies and techniques to counter the program—and enemies will have 15 to 25 years to do it. This indicates not only the need for shorter capabilities cycle times, but also the need for incentives and methods for program managers to make changes as quickly as the threat dictates or the technical environment changes.

The process which delivers programs, along with their associated costing and budgeting, is called PPBS, the Planning, Programming and Budgeting System, which came into being in the early-1960s. Over time, programming has come to dominate planning to the point where this year's planning is subordinated to last year's programming. The result is a logical incrementalism, which seems to defy managerial control. In short, there are four

key processes within the department, all of which require repair and are the focus of increasing management attention.

- We need to change the requirements process to make it more future going, entrepreneurial, and more focused on top-level concepts and decision logic. It is a tool for creating our future.
- Continue the shift in executive focus of PPBS to planning.
- Change acquisition to sharply decrease capabilities cycle time to match commercial experience.
- Change personnel management policies to provide for the continuous training and early executive education of the civilian DoD workforce and broaden the acquisition base for our uniformed personnel. .

The understanding that the four processes are dysfunctional is broad, but the discomfort of knowing this is exceeded only by the discomfort of having to change them to something less familiar. We cannot long live with this contradiction. The department's senior leadership is moving relentlessly to correct and realign these processes with information age realities.

In the military operations realm, a related contradiction is that we are entering a new era of military operations and capabilities. The very character of warfare is changing to account for the massive implications of the information age. It embodies the new decision logic with attributes that we will become increasingly familiar with and comfortable. We can already see its effects in current operations. The last time we witnessed change of this magnitude was with the advent of the industrial age and *levee en masse* (the mobilization of entire societies for war). Both of these events are rapidly receding into the past. A new American way of war has emerged—network centric operations.

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